

providing a reactor chamber with an interior space and a reactor wall having a first side formed with inlet openings communicating with the interior space and a second side;

mounting a substrate having a surface at the second side of the reaction wall in the interior space of the reactor chamber;

providing a distributor plate in the interior space of the reactor chamber;

setting a distance between the distributor plate and the substrate of less than 2 cm;

performing chemical vapor deposition by introducing into the interior space starting gases containing elements of a solid-state layer to be deposited on the surface of the substrate and at least one auxiliary substance through the inlet openings;

providing the auxiliary substance in a form containing molecules having a dipole moment and a property of briefly attaching themselves, during a deposition process, to the surface of the substrate with a dipole moment perpendicular to the surface of the substrate in order to dictate a crystal structure of the solid-state layer;

providing the reactor chamber with a gas outlet; and

pumping away reaction products through the gas outlet.

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Claim 2(amended). The method according to claim 1, wherein the step of introducing the auxiliary substance includes feeding the auxiliary substance into the interior space from an external supply source.

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Claim 4(amended). The method according to claim 1, which comprises:

providing the auxiliary substance substantially from reaction products being pumped away from the interior space during the chemical vapor deposition.

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Claim 6(amended). The method according to claim 5, which comprises providing the solid-state layer with a Perovskite structure.

Claim 7(amended). The method according to claim 1, which comprises:

setting the distance between the distributor plate and the substrate preferably at approximately 1 cm.

Claim 8(amended). The method according to claim 1, which comprises providing the distributor plate as a perforated plate.

Claim 9(amended). The method according to claim 1, which comprises introducing a carrier gas through the inlet openings.

Claim 10(amended). The method according to claim 1, which comprises:

providing the reactor chamber with a further gas outlet opening formed in the reactor wall downstream of the substrate; and

providing a connecting line connecting the gas outlet opening to one of the inlet openings located downstream of the distributor plate.